REMARKS

This response is being filed within three months of the Office Action dated May 14, 2008. Claims 26-27, 31-32, 38, 41 and 73-81 are pending in the application. Claims 26 and 75 are in independent form. Claim 26 has been amended. No new claim fees are required.

In the Office Action dated May 14, 2008, the Examiner objected to Figure 2 in stating that reference number 230 is not shown in Figure 2 as filed. By this response Applicants submit herewith a replacement drawing sheet 1 including figures 1 and 2. In the replacement drawing sheet, Figure 2 has been amended to include reference number 230. Applicants request the Examiner to replacement drawing sheet 1 with the replacement drawing sheet 1 submitted herewith. Applicants request the Examiner to withdraw the objection of the drawings and to accept the drawings, including replacement drawing sheet 1.

In the Office Action dated May 14, 2008, the Examiner objected to claim 26 in stating that improper Markush language was used. By this response Applicants have amended claim 26 to recite "the group consisting of," as suggested by the Examiner. Applicants request the Examiner to withdraw this objection of claim 26.

Claims 26-27, 31-32, 41 and 73: In the Office Action dated May 14, 2008, the Examiner rejected claims 26-27, 31-32, 41 and 73 under 35 U.S.C. 103(a), as allegedly being unpatentable over Guo (US 2006/0237881) in view of Yang (US 2004/0071924).

The legal standard for a rejection under 35 U.S.C. 103(a) is set forth in Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573, 37 U.S.P.Q.2d (BNA) 1626 (Fed. Cir. 1996) (A rejection under 35 U.S.C. 103 requires the Examiner to establish a prima facie case that the cited references show each and every element of the rejected claim) and W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1553 (Fed. Cir. 1983) cert. denied 469 U.S. 851 (1984) (Hindsight may not be used to show suggestion or motivation to combine references, and warning against "the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.").

Applicant's independent claim 26 recites "releasing the imprint mold to expose a template having a template surface formed into the imprint resist layer and having nanoscale openings formed therein to receive nanoscale objects; and depositing a plurality of discrete nanoscale objects onto the template such that the nanoscale objects are received within said nanoscale openings." (emphasis added). Guo and Yang, either alone or in combination, do

not teach or suggest these recitations of Applicants' claim 26.

As recited by the Examiner in the Office Action on page 4, "Guo fails to disclose the step of depositing a plurality of discrete nanoscale objects onto the template such that the nanoscale objects are received within said nanoscale openings." Yang fails to supplement the shortcomings of Guo because Yang does not teach or suggest depositing nanoscale objects in the nanoscale openings of a resist layer.

Yang teaches a magnetic recording media wherein a resist layer is formed on a substrate, part of the resist is removed to form a mask, a pattern is formed in the substrate itself using the resist layer as a mask, the remainder of the resist layer is completely removed, and then nanoscale particles are deposited into the pattern formed directly in the substrate. In particular, Yang teaches:

> "After removal of the photoresist 18, a locking pattern is etched into the disc substrate 16 in areas 22 where the photoresist 18 has been removed. In one example, the locking pattern is etched into the disc substrate 16 utilizing a reactive ion etching process, and has typical dimensions of sub-micron down to 100 nm. After the locking pattern has been etched into the disc substrate 16, any photoresist 18 remaining on the disc substrate 16 is removed. (Yang, [para 0053]). . . After the locking pattern has been etched into the disc substrate 16, the discs are

> 'planarized' by filling the locking pattern with nanoparticles 26 such that the nanoparticles, self-assemble into the locking pattern forming magnetic arrays 28." (Yang, [para 0057]).

Similar to the recitation of Yang listed directly above, in every single example of Yang, the resist is completely removed before the deposition of nanoscale objects. In other words, Yang does not teach or disclose "depositing a plurality of discrete nanoscale objects onto the template such that the nanoscale objects are received within said nanoscale openings [in the resist layer]."

In one single embodiment Yang teaches: "Alternatively the topographical pattern formed in the Sol-Gel-type coating could itself serve as the locking pattern. The Sol-Gel-type coating would remain on the disc substrate 16, and nanoparticles 26 would be deposited into the topographical/locking pattern formed in the Sol-Gel-type coating in the same manner as the nanoparticles are deposited into the locking pattern in the disc substrate 16." (Yang, [para 0056]).

However, as will be understood by those skilled in the art, the Sol-Gel-type coating disclosed by Yang is not amenable to the steps of Applicants' method recited in claim 26, namely, "stamping an imprint mold having nanoscale teeth onto the resist layer; releasing the imprint mold to expose a template having a template surface formed into the imprint resist layer and having nanoscale

openings formed therein to receive nanoscale objects." In particular, "stamping an imprint mold" into a Sol-Gel-type coating would result in crushing of the suspended particles in the Sol-Gel-type coating, and/or would result in a poor imprint of the pattern of nanoscale openings into the Sol-Gel-type coating due to the Gel-type nature of the Sol-gel-type coating. Accordingly, there is no teaching or suggestion to combine the teachings of Guo and Yang because Yang does not teach or suggest depositing nanoscale objects into openings in a resist layer, and Yang's Sol-Gel-type coating is not amenable to the Guo imprinting method, as is a resist layer.

Accordingly, Guo and Yang, either alone or in combination, do not teach or suggest Applicants' claim 26 which recites "depositing a plurality of discrete nanoscale objects onto the template such that the nanoscale objects are received within said nanoscale openings [of the resist layer]." Moreover, the Yang reference teaches away from combination with Guo because the Sol-Gel-type coating of Yang is not amenable to imprinting a nanoscale pattern of openings in the gel due to the nature of Sol-Gel-type coatings.

The Examiner has not met his burden of proving a prima facia case that Guo and Yang, either alone or in combination, teach or suggest the method as recited in Applicant's claim 26, and Applicants respectfully request the Examiner to withdraw the rejection of independent claim

26, and corresponding dependent claims 27, 31-32, 41 and 73, and to allow these claims under 35 U.S.C. 103(a). See Pro-Mold and W.L. Gore.

Claims 26-27, 31-32 and 73: In the Office Action dated May 14, 2008, the Examiner rejected claims 26-27, 31-32 and 73 under 35 U.S.C. 103(a), as allegedly being unpatentable over Chuo (US 6,828,244) in view of Yang (US 2004/0071924).

Applicant's independent claim 26 recites "releasing the imprint mold to expose a template having a template surface formed into the imprint resist layer and having nanoscale openings formed therein to receive nanoscale objects; and depositing a plurality of discrete nanoscale objects onto the template such that the nanoscale objects are received within said nanoscale openings." (emphasis added). Chuo and Yang, either alone or in combination, do not teach or suggest these recitations of Applicants' claim 26.

As recited by the Examiner in the Office Action on page 6, "Chuo fails to disclose the step of depositing a plurality of discrete nanoscale objects onto the template such that the nanoscale objects are received within said nanoscale openings." Yang fails to supplement the shortcomings of Chuo because Yang does not teach or suggest depositing nanoscale objects in the nanoscale openings of a resist layer.

Yang teaches a magnetic recording media wherein a resist layer is formed on a substrate, part of the resist

is removed to form a mask, a pattern is formed in the substrate itself using the resist layer as a mask, the remainder of the resist layer is completely removed, and then nanoscale particles are deposited into the pattern formed directly in the substrate. In particular, Yang teaches:

> "After removal of the photoresist 18, a locking pattern is etched into the disc substrate 16 in areas 22 where the photoresist 18 has been removed. In one example, the locking pattern is etched into the disc substrate 16 utilizing a reactive ion etching process, and has typical dimensions of sub-micron down to 100 nm. After the locking pattern has been etched into the disc substrate 16, any photoresist 18 remaining on the disc substrate 16 is removed. (Yang, [para 0053]). . . After the locking pattern has been etched into the disc substrate 16, the discs are 'planarized' by filling the locking pattern with nanoparticles 26 such that the nanoparticles, self-assemble into the locking pattern forming magnetic arrays 28." (Yang, [para 0057]).

Similar to the recitation of Yang listed directly above, in every single example of Yang, the resist is completely removed before the deposition of nanoscale objects. In other words, Yang does not teach or disclose "depositing a plurality of discrete nanoscale objects onto the template such that the nanoscale objects are received within said nanoscale openings [in the resist layer]."

In one single embodiment Yang teaches: "Alternatively the topographical pattern formed in the Sol-Gel-type coating could itself serve as the locking pattern. The Sol-Gel-type coating would remain on the disc substrate 16, and nanoparticles 26 would be deposited into the topographical/locking pattern formed in the Sol-Gel-type coating in the same manner as the nanoparticles are deposited into the locking pattern in the disc substrate 16." (Yang, [para 0056]).

However, as will be understood by those skilled in the art, the Sol-Gel-type coating disclosed by Yang is not amenable to the steps of Applicants' method recited in claim 26, namely, "stamping an imprint mold having nanoscale teeth onto the resist layer; releasing the imprint mold to expose a template having a template surface formed into the imprint resist layer and having nanoscale openings formed therein to receive nanoscale objects." In particular, "stamping an imprint mold" into a Sol-Gel-type coating would result in crushing of the suspended particles in the Sol-Gel-type coating, and/or would result in a poor imprint of the pattern of nanoscale openings into the Sol-Gel-type coating due to the Gel-type nature of the Sol-gel-type coating. Accordingly, there is no teaching or suggestion to combine the teachings of Chuo and Yang because Yang does not teach or suggest depositing nanoscale objects into openings in a resist layer, and Yang's Sol-

Gel-type coating is not a resist and is not amenable to the Chuo imprinting method, as is a resist layer.

Accordingly, Chuo and Yang, either alone or in combination, do not teach or suggest Applicants' claim 26 which recites "depositing a plurality of discrete nanoscale objects onto the template such that the nanoscale objects are received within said nanoscale openings [of the resist layer]." Moreover, the Yang reference teaches away from combination with Chuo because the Sol-Gel-type coating of Yang is not amenable to imprinting a nanoscale pattern of openings in the gel due to the nature of Sol-Gel-type coatings.

The Examiner has not met his burden of proving a prima facia case that Chuo and Yang, either alone or in combination, teach or suggest the method as recited in Applicant's claim 26, and Applicants respectfully request the Examiner to withdraw the rejection of independent claim 26, and corresponding dependent claims 27, 31-32 and 73, and to allow these claims under 35 U.S.C. 103(a). See Pro-Mold and W.L. Gore.

Claim 38: In the Office Action dated May 15, 2008, the Examiner indicated that dependent claim 38 would be allowable if rewritten in independent form.

Claim 74: By this response Applicants' have added new claims 74-80. New claim 74 recites "**wherein said depositing a plurality of discrete nanoscale objects is conducted in the absence of depositing a nanoscale-object-**

attracting-coating in said nanoscale openings." Yang does not teach or suggest this claim recitation.

Each example of Yang discloses "depositing nanoparticles in the chemically modified patterned regions such that the nanoparticles self-assemble in the patterned regions and chemically bond to the substrate." (Yang, [para 0022]). More particularly, Yang discloses that a "first chemical substance may be deposited on the disc substrate 16 at the areas 22 corresponding to the locking pattern . . . The first chemical substance will have properties such that it attracts the nanoparticles 26, such that a chemical covalent bond is formed between the first chemical substance and the nanoparticles." (Yang, [para 0061]). Use of the chemical substance to "self-assemble" the nanoparticles is a requirement of Yang because Yang teaches "long-range ordering over a large area" (Yang [para 0013]) and that "additional layers of nanoparticles may be applied to the substrate in a manner similar to the application of the second and third payers of nanoparticles" (Yang [para 0027]); see also figures 6 and 8 of Yang.

In contrast, Applicant's new claim 74 recites that no such chemical modification step is utilized. No such chemical modification step is utilized in Applicants' method because Applicants' method utilizes smaller sized nanoscale openings than that of Yang, wherein a small number of nanoscale objects are received in each of Applicants' nanoscale openings. Accordingly, no "self-

assembly coating" is utilized in the nanoscale openings of Applicants' method because the small size of the openings themselves provide a desirable ordered arrangement of the nanoscale objects.

Yang does not teach or suggest Applicants' new claim 74 and Applicants respectfully request allowance of the same. See Pro-Mold and W.L. Gore.

Claims 75-81: By this response Applicants have added new claims 75-81. The cited references do not teach or suggest the recitations of newly added claims 75-81 and Applicants respectfully request allowance of the same. See Pro-Mold and W.L. Gore.

Conclusion

All of the pending claims are believed to be in condition for allowance, and such allowance is respectfully solicited. The Examiner is requested to contact Applicant's counsel Ingrid McTaggart at (503) 230-7934 regarding any questions concerning this response.

Respectfully submitted,

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